ANNUAL REPORT FOR FISCAL YEAR 2001/2002

OMAF-FUNDED RESEARCH, EDUCATION AND LABORATORY SERVICES PROGRAMS

Integrated Research, Education and Laboratories Programs
Serving Ontario=s Agriculture and Food Industries

September 30, 2002

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EXECUTIVE SUMMARY

Background

This is the fifth Annual Report on the Enhanced Partnership submitted to the Ontario Ministry of Agriculture and Food (OMAF) by the University of Guelph under the Memorandum of Agreement (MOA) that was in effect for 5 years between April 1, 1997 and March 31, 2002.

This report covers the activities, expenditures and performance measures for the programs covered by the MOA. In this report the activities are reported for the University fiscal year from May 1, 2001 to April 30, 2002. Essentially, this is a report on the last year of the 5-year Agreement.

The program areas are Research, Education and Laboratory Services and each area has an individual report.

Summary of Activities and Results

A highlight during 2001/2002 was the signing of a new 5-year Agreement between the University of Guelph and OMAF.

During the year, the 4-year review and proposal for the next 4 years for the Animal Program was completed, accepted and implemented.

There were 327 active projects in 2001/2002. Highlights of research accomplishments are listed for each of the research programs in Animal, Plants, Resources Management and Environment, Food and Sustainable Rural Communities.

University research funding beyond the Agreement increased by 12% over the previous year, to $69 million. Peer-reviewed journal publications also increased. The use of the internet as a method of providing information to producers and the public had explosive growth. Most targets in the research program were met. Seed royalty dollars declined from $680,000 in the previous year to $510,000. Royalties from the soybean variety OAC Bayfield continued to decline as the variety got older. The rapid increase in Roundup Ready ™ soybean also decreased royalties on publicly-bred soybean varieties. Non-seed royalties, including vaccines, diagnostic systems and food processing technology, totalled $490,000, bringing total royalties to $1 million.

Diploma education at the Colleges at Alfred, Kemptville and Ridgetown and at the Guelph campus was being revamped during the year. There were 440 students who graduated, up 19% from the previous year, and close to 100% employment rate was reported. Continuing education programs at the three Colleges generated revenues of $3.8 million, down 5.5% from the previous year.

The Laboratory Services Division (LS) continues to provide high quality testing and diagnostic services to public and private clients in the agriculture, food and veterinary industries. The Analytical Laboratories performed 860,000 tests in support of regulatory programs. The Animal Health Laboratory (AHL) performed about 590,000 tests in support of disease surveillance. Total revenue from outside the Agreement of $8 million increased by $2.4 million over the previous year. Much of the increase is from large projects, such as analytical services for Plum Pox virus.

Lab Services Division reinvested a total of $2.3 million in equipment replacement and infrastructure. The equipment improvements enabled LS to introduce new testing capabilities to support OMAF's programs.

The Veterinary Clinical Education Program (VCEP) continued to provide support for Veterinary Teaching Hospital Clinics, advanced clinical training, 1-year post-graduate Veterinary Internship Program in the teaching hospital, referral and emergency services in support of Ontario veterinary practitioners and the animal-owning public. VCEP also supports OVC accreditation requirements of the Canadian and American Veterinary Medical Associations (AVMA) and The College of Veterinarians of Ontario.

The AVMA review was conducted in February 2002 and results are pending. All 12 post-graduate interns found employment. Performance of undergraduate students in the externship evaluations improved over previous years.

Media coverage was improved by the Enhanced Agricultural Communication Initiative and the very successful SPARK (Students Promoting Awareness of Research Knowledge) program. There are 51 articles listed which came from these programs. Another highlight is the number of student writers who have gone on to careers in journalism.

There were significant changes in the management of the OMAF contract during 2001/2002. Dr. Alan Wildeman was appointed as the new VP Research at the University of Guelph, effective July 1, 2001. Dr. David Hume, who was the Executive Director for the University of Guelph/OMAF Research Programs, became Associate VP, Research for Agri-Food and Partnerships.

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1. Research Program

1.1 Accomplishments in 2001/2002

Management Accomplishments

- A new 5-year University of Guelph/OMAF Agreement for Research, Education and Laboratory Services was signed in March 2002, effective April 1, 2002.
- During the year, the Dairy and Swine programs within the Animal Research Program were approved by OMAF and a 4-year plan for research in all seven animal species programs was approved.
- All of the seven animal species research programs were fully implemented during the year.
- The Plant Research Program geared up during the year for a 4-year review (1998-2002), which was presented to the Agricultural Research Institute of Ontario (ARIO) on June 19, 2002 (after this reporting year ended). A 4-year research proposal (2002-2006) was also prepared for an OMAF Review Committee presentation on June 24, 2002.
- The Resources Management and Environment (RM&E) Program expanded its Executive Committee membership to include representation from Resources Management and Crop Technology of OMAF. Within RM&E, collaborative projects were developed to address environmental issues, including expertise in environment, economics, animal science, soils and manure management.
- Dr. Wayne Caldwell managed the Sustainable Rural Communities (SRC) Research Program for part of the year, providing Dr. Tony Fuller, the Research Program Director, an opportunity to work with various levels of government. SRC has rapidly expanded its external funding. Two years into the SRC research plan, external funding objectives have already been met.
- Seven new projects were approved for Foods Program funding following the 2001/2002 review process. One of the projects is a collaboration across three Colleges to study consumer acceptability of functional foods.
- Additional funding ($523,000 over three years) for Food Safety research was obtained through NSERC Strategic Grants Program. The research brings together 11 researchers from the University of Guelph, Agriculture and Agri-Food Canada, Health Canada and OMAF.
- Dr. Steve Bowley, from the Department of Plant Agriculture, has been appointed as the Co-ordinator of Plant Germplasm Intellectual Property. He has made significant improvements in how Intellectual Property (IP) issues around Plant Germplasm co-developed by the University of Guelph and OMAF are handled.
- There was a smooth transition from Dr. Brian Buckrell to Dr. Paula Menzies as Sheep Co-ordinator within the Animal Research Program. Thanks to Brian for his leadership and wise counsel.

- Other than the changes noted, the University of Guelph Management Team for the Enhanced Partnership remained unchanged and the stability was appreciated during the development of a new Agreement.

Highlights of Research Accomplishments

Animal Program

- Research has identified that a dietary supplement of 5% chicory inulin to swine diets reduces nitrogen - related odour and environmental pollution, particularly those odourous emissions associated with skatole.

- It was discovered that drinking water can be an efficient, effective method for supplementing fish oil into the diets of lactating dairy cows rather than in the feed.

- For soils not subjected to erosion, 38% less land is required for spreading manure from Enviropigs in comparison to present pigs and for soils subjected to erosion, 63% less land would be required for the spreading of manure from an Enviropig herd.

- Monitoring growth of dairy replacement heifers is useful to ensure that first calving approximates 24 months. A hipometer, an easy, accurate, rapid method to determine bovine body growth, was invented

- A rapid and accurate method was developed to determine the type of pathogen causing clinical mastitis. The test was termed the ColiMast and a color change indicates the presence of coliforms. This simple test offers great promise for use in a treatment decision-making protocol.

- Yield of marketable fish products is different for different species and diets. Research has shown that isoenergetic diets with different protein contents have significant effects on carcass yield and chemical composition of the fish product.

- A comprehensive study to determine true phosphorus digestibility and P outputs with conventional Ontario corn was undertaken. Results indicate that swine diets based on total apparent P in corn inevitably leads to P overfeeding and excessive excretion into the environment.

- Extended light (18h vs 10h) given to calves during the nursery period increases feed and water intake and body growth.

- Piglet mortality during the first 7 days of life can be significantly reduced by subjecting the piglet to 10 min. of O_2 within the first hour of life. This discovery could save approximately 200,000 piglets/year in Ontario.

- A model has been constructed which detects the rate limiting enzyme for synthesis of milk in the bovine mammary gland. This development will lead to precise metabolic control analysis which will result in less waste excretion by the dairy cow.

- An alternative to hutch housing for calves was developed and tested. The greenhouse housing system enhanced health in extremely cold conditions and equaled hutch housing spring, summer and fall.

- The ideal sampling protocol for milk safety and quality was studied. It is recommended to agitate milk for 2 minutes and then use the standard bottom sampling method.

- Poultry disease is a major threat to chickens raised in a production environment. Differential expression of a candidate gene for Marek's Disease has been detected. This discovery will provide strategies for prevention and understanding the pathogenesis of this important disease.

- A beef feedlot initiative compared the performance of cattle fed four different diets containing 25 or 70 percent grain. However, the Steers fed the 35% corn/ 50% silage diet out gained steers fed 70% barley/15% silage. An economic analysis indicated that the high silage diets were more economical. Most carcass measurements were unaffected by diet. However, taste panel analyses are yet to be completed.

Plant Program

- Automated nutrient delivery and nutrient and water recycling for greenhouse vegetables and ornamentals produced high quality plants with no negative impact on productivity and reduced fertilizer cost by as much as 40%. This reduces the environmental impact associated with greenhouse production.

- New, innovative, environmentally friendly practices were developed for the ornamental nursery and landscape industry. These include the use of waste-derived potting mixes, nutrient recycling and production of trees in a variety of substrates from waste by-products.

- 1- MCP was used to successfully block ethylene production, control ripening and extend storage and shelf life in apples and a number of other horticultural commodities.

- Significant progress has been made in the development of white and yellow food-grade corn germplasm. A successful white corn industry is in the early stages of establishment in Ontario.

- Root rot disease in hydroponic systems was effectively controlled with a range of microbial agents. A fungal agent controlled *Botrytis* in hydroponic systems more effectively than available fungicides. This facilitates nutrient recirculation systems in the greenhouse.

- A new approach for controlling bacterial diseases in vegetables has been shown. The processing tomato and pepper growers in Ontario have not been very successful in controlling bacterial diseases with the copper products currently available. Recent research has shown that a combination of products such as Prolistimmol and Actigard are capable of producing stronger tomato and pepper transplants with levels of systemic acquired resistance capable of warding off or delaying these diseases when properly timed.

- The Ontario Weather Network (OWN) has added BeetCast to its weather-based delivery services. A new program has been developed to address the fungicide timing needs of the main sugarbeet foliar disease, Cercospora Leafspot. The Ontario Sugarbeet Growers

Association has purchased the rights to have this program universally delivered to each of their growers through the internet. The delivery of the tomato disease forecasting service, TomCast for processing tomato growers is now provided in a similar fashion through the internet. OWN continues to offer Tuberium wheat alone along with providing weather package information to much of the agricultural industry. OWN has launched a pilot project in Michigan. The project is with the sugarbeet industry including growers, processors and university personnel bringing the benefits of weather based spray programs such as BeetCast to our US neighbours. Check OWN out at www.ontmet.on

- Corn producers have been worried about losing Lorsban as a seed treatment to corn for seedling insect control. Extensive on-farm and laboratory research with transgenic corn and new seed treatment insecticides has resulted in new options for producers to protect young corn from several corn insect pests. The combination of these two new technologies now protects against black cutworm, common armyworm, wireworm, seed corn maggot, white grubs, corn rootworm, flea beetles and European corn borer. This broad spectrum of insect control arriving in the seed bag has, until now, not been enjoyed by producers.

- Two soft red winter wheat cultivars, Sisson and PRO 2030BW, have been released as part of a collaborative agreement with Virginia Polytechnical Institute and State University. Three new soybean varieties were also released and are being marketed by three different seed companies in Ontario. Both the wheat and soybean lines provide material with significantly improved agronomic characteristics to the industry.

- The potato leafhopper is one of the dry bean industry's worst pests, accounting for in excess of 5% yield loss each year. Currently, Ontario growers have one control measure, the foliar application of an organophosphate insecticide. Results of several studies have identified two seed treatments that control potato leafhopper at levels below economic damage thresholds, for up to 3 weeks after planting. This level of control would effectively control the pest for the entire growing season. Potential grower savings could exceed $30/ac per acre with the significant added benefit of reduced environmental and grower exposure to a foliar insecticide.

- Two winter canola hybrids have been identified which out-yield currently grown, open-pollinated cultivars by 30%. These results have rejuvenated interest in winter canola in Ontario.

Resource Management and Environment (ENGE)

- Research has highlighted how application of liquid and solid manure can respectively increase or decrease the amount of water flowing in the larger pore domain in soil. The survival of manure pathogens after land application has been found to be greater when liquid manure is used than if solid manure is applied. The ions composition and suspended organic matter greatly affect the retention of bacteria on soils. Initial retention is influenced by the charges on the bacterial surface, but hydrophobicity is important for the longer term retention. Overall, clay soils therefore tend to support the transport of bacteria rather than their retention.

- No-till soybeans are colonized by beneficial mycorrhizal fungi more rapidly than those under other conventional cultivation. The earlier colonization by the fungi also stimulates rapid colonization by *Bradyrhizobium japonicum* and results in larger root nodules. In laboratory conditions, the larger nodules were found to fix more nitrogen.

- Composting of liquid manure appears to offer a viable alternative to storage. The associated benefit is the reduction in greenhouse gas production relative to typical anaerobic storage where the manure is composted with straw. Although the study did not include final testing of the compost, emissions of N_2O and CH_4 were much less than those produced by the Intergovernmental Panel on Climate Change.

- A model has been produced to measure the damage from wildlife or farms that can use the willingness of farmers to contribute to the stewardship of wild creatures. Previous models have overestimated the social costs from wildlife damage because they only did crop yield reductions. Farmers were found to accept stewardship responsibilities for wildlife as long as their revenue losses were not severe.

- The use of paramid biosolids on agricultural land resulted in improved soil quality after a period of about 2 years, especially an increase in water infiltration, aggregation and storage. However, application of the biosolids is going required the additional use of fertiliser nitrogen to avoid deficiency symptoms in the plants. The additional N requirement can be predicted from the application rate of biosolids.

- Business statistics for Ontario's horticulture industry (ornamental) have been collected for the past two years. Analysis done has given an insight of services the sector can be projected from survey information provided by business owners and managers. This does not include the golf industry, independent florists, municipal parks or those who garden under estate.

- A system to compost liquid manure has been operating at Bridgetown College for three years. Liquid swine manure has been mixed with a variety of carbon rich materials and successfully composted. Most recently, the project looked at the feasibility of using paper sludge as the carbon source. The material is a by-product of the paper recycling process and is roughly 33% paper fiber, 33% clay, and 33% moisture. The material was suitable for composting although the high clay content resulted in a muddy look to the finished cured compost, which may limit marketing possibilities. Direct use as bed material will be offered.

- A comprehensive study was conducted to determine the feasibility of designing a livestock manure processing research demonstration plant that could ensure the efficient value of manure, reduce emission of greenhouse gases, conserve water utilization, improve water quality, eliminate harmful pathogens in manure, and to stabilize nutrients to an organic fertilizer product.

Goat Program

- Research to promote antibody producing competence in animals without compromising other immune system responses is full of risk. Single blood tests have been identified to assess the value of high titration and risk of functional tests to promote immune system competence in animals.

- The impedance microbiological method was developed and tested for detecting *Salmonella* in beef and poultry carcass rinses as well as poultry environmental samples. The results indicated that the system can detect low levels (< 10 CFU per mL or g) of beef carcass rinses and poultry environmental samples. Further modification of the media is required to

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1.2 Budget

Funds for research were allocated to five commodity/discipline areas in the 2001/2002 budget. All research expenditures (Faculty FTE and program overhead costs) at all locations are included in Table 1-1.

Table 1-1: 2001/2002 Research Budget and Actual Expenditures ($ x 000)

	[illegible]		Alfred		Kemptville		Ridgetown		Guelph		TOTAL		
	01/02 Budget	01/02 Actual	01/02 Budget	01/02 Actual	01/02 Budget	01/02 Actual	01/02 Budget	01/02 Actual	01/02 Budget	01/02 Actual	00/01 Actual	01/02 Budget	01/02 Actual
Plants	1,919	1,914	--	--	718	745	1,386	1,365	5,170	5,229	9,235	9,193	9,253
Animals	--	--	--	--	488	356	159	97	5,626	5,532	6,404	6,185	5,985
Food	120	120	--	--	--	5	--	--	1,235	1,209	1,063	1,355	1,334
Resources*	--	--	--	--	91	87	290	268	2,328	2,260	2,606	2,709	2,615
S...C**	--	--	--	--	--	--	16	12	321	245	320	337	257
Res. Sites	1,120	1,224	184	184	1,050	1,133	717	616	5,942	6,799	10,217	9,013	9,956
I & I***	--	--	78	67	98	89	127	109	102	6	295	307	351
Sub-Total	3,159	3,258	262	251	2,349	2,415	2,695	2,547	20,724	21,300	30,142	29,189	29,771
Overhead	735	690	40	42	500	689	499	484	6,079	6,079	7,479	7,813	7,986
Total	3,894	3,948	302	293	2,849	3,104	3,194	3,031	26,803	27,379	37,621	37,042	37,795

* Resources Management and Environment

** Sustainable Rural Communities

*** Research Infrastructure and Support

Note: Breakdown of costs includes revenues and year-end carryforwards.

1.3 Performance Measures

Objective	Measure/Activity	Result
Increase funding in support of research under the OMAF contract from outside sources	Increase total funding from outside sources relative to the base funding from OMAF.	Granting Councils $ 16,047,518 Federal Gov't 16,797,677 Ont. Gov't (non-MDA) 13,241,116 Business & Industry 16,449,553 Charitable Organizations 3,981,377 Other Gov'ts 900,095 Private donors 521,605 Networks of Centres of Excellence 1,222,877 **Total : 2001/2002 $ 69,162,018** 1995/1996: $ 32.7 m 1996/1997: $ 33.0 m 1997/1998: $ 40.8 m 1998/1999: $ 38.0 m 1999/2000: $ 52.0 m 2000/2001: $ 61.5 m The 2001/2002 total is 12.5% higher than the previous year. These values represent total funding to the University of Guelph in support of research beyond the OMAF Contract. Federal government support increased by $6m, mainly due to successful CFI grants. The granting council support was down by $1.2m, compared to the previous year. Non-Agreement support increased by $1.7m and Business and Industry support increased by $1m.
	Increase total number of organizations providing funding.	Organization / Business and Industry 1998/1999: 490 / 264 1999/2000: 576 / 331 2000/2001: 416 / 236 2001/2002: 487 / 285 Beginning in 2000/2001, contributors were counted when funding was received rather than when an agreement was in place. Some of the decline in 2001/2002 occurred because payments were not received until 2001/2002. This also may account for part of the increase in 2001/2002. In addition, rationalization continues to occur throughout the agri-business sector.
	Increase the number of repeat contributors.	1998/1999: 316 1999/2000: 300 2000/2001: 281 2001/2002: 324 The change in the accounting procedures noted immediately above account for at least part of the annual changes over the last 2 years.
	Increase funding from business and industry, in particular.	1997/1998: $ 9.9 m 1998/1999: $12.0 m 1999/2000: $12.2 m 2000/2001: $15.4 m 2001/2002: $16.4 m The funding from Business and Industry increased by 6.9%. Business and Industry includes substantial support from agricultural commodity organizations and producer groups. Support from the Business and Industry sector has increased in each of the last 5 years.

Objective	Measure/Activity	Result
Licenses and Patents, Royalties	Increase from 70 agreements in 1997/1998.	Number of agreements on seeds and plant material 1997/1998: 70 1998/1999: 80 1999/2000: 115 2000/2001: 119 2001/2002: 126 The University of Guelph holds 111 patents with 185 pending.
	Increase seed royalties from approximately $600,000 in 1997/1998 to $1 million by 2002. Seed Royalties: 1997/1998: $600,000 1998/1999: $800,000 1999/2000: $590,000 2000/2001: $680,000 2001/2002: $510,000 Non-seed royalties: 2001/2002: $490,000 Total royalties: $1 million	Seed royalties include $51,700 in royalties for a canola hybrid pollination system. These actually are technology royalties but the technology was provided as seed. Non-seed royalties are for technologies including vaccines, diagnostic systems and food processing. Seed royalties have dropped as OAC Bayfield soybean royalties decreased but Ivory, a Ridgetown soybean variety, appears likely to become a major royalty earner. Seed royalties did not increase to $1 million by 2002, but total royalties did.
Technology Transfer	Number of peer-reviewed journal publications. (Target approximately 350 papers per year; one paper per $25,000 of operating funds).	1998/1999 – 369 plus 21 books and 45 chapters in books 1999/2000 – 381 plus 29 books and 16 chapters in books 2000/2001 – 326 plus 7 books and 40 chapters in books 2001/2002 – 345 plus 24 books and 44 chapters in books Analysis: Peer reviewed journal publication numbers rebounded from a low number last year. Values reported are for publications dated in calendar years, so the 2001/2002 report is for publications in 2001 (because researchers provide annual reports in January).
	Number of scientific conference papers.	1998/1999 – 521 1999/2000 – 540 2000/2001 – 454 2001/2002 – 487 The increase may be partially explained by the large number of conference presentations, particularly by graduate students, made at major meetings held in Ontario in 2001. Rapidly increasing travel and accommodation costs were avoided for local meetings.
	Number of reports.	1998/1999 – 220 1999/2000 – 277 2000/2001 – 373 2001/2002 – 226 There was a marked decline in the number reported, back to earlier levels.
	Published Graduate Students' Theses reported by UofG Faculty or CARG members in their annual reports.	2001/2002 – 83 (not reported previously)
	Number of software products.	1998/1999 – 7 1999/2000 – 2 2000/2001 – 1 2001/2002 – 1 This activity has become so specialized that very few faculty release software products.

Objective	Measure/Activity	Result
	Number of presentations in media.	1998/1999 – 446 1999/2000 – 323 2000/2001 – 307 2001/2002 – 190 Two things appear to be occurring. One is that researchers are using the internet much more to report to producers. The other is that reporters and SPARK students write about projects and the articles do not have faculty members as authors.
	Number of presentations on the internet.	1998/1999 – not reported 1999/2000 – 11 2000/2001 – 111 2001/2002 – >300 The explosive growth in use of the internet by researchers made counting difficult. Many of the individual websites are updated regularly and are not totally new presentations. Departments or Colleges have hired webmasters who load information but it does not necessarily appear under the byline of an individual researcher.
	Number of presentations at meetings and conferences.	1998/1999 – 850 1999/2000 – 624 2000/2001 – 538 2001/2002 – 581 Numbers include conference presentations, which also increased. Presentations to producer groups and farm meetings appear to be relatively unchanged.
	Number of provincial/national agri-food committees on which UofG faculty participate.	1998/1999 – 194 1999/2000 – 190 2000/2001 – 250 2001/2002 – 232 Many faculty and CARG members participate on a number of provincial and national agri-food committees.
Client (OMAF) Satisfaction	Percent of projects completed on time and budget and project milestones delivered (target is 95% or more complying).	1998/1999 – 96% 1999/2000 – 96% 2000/2001 – 95% 2001/2002 – 95%
	Deliverables identified in MOA available on time and deadlines met.	Achieved.
	Delivery of project/program milestones.	In 2000/2001 the Animal Research Program 4-year report was accepted by ARIO. Annual reports were made by the Resources Management and Environment and Plants Program and those also were accepted.
Impact of Research	Number of studies conducted (target is to review the economic impact of five projects per year).	Rather than study individual projects, the long-term benefit:cost ratio of the soybean breeding program was conducted, which involved several projects. Preliminary results indicate the benefit:cost ratio for soybean breeding since 1989 has been about 49:1, based on a real discount rate of 5% (Source: MBA Major Paper for G. Brinkman).

Objective	Measure/Activity	Result
	Impact and significance of research programs	Some examples of significant impacts include: (see details in Highlights of Research Accomplishments in this Annual Report). • Research results, particularly from the Resources Management and Environment program were used extensively to provide scientific information in defence of agricultural practices during the Walkerton Inquiry. • A rapid testing method for *Salmonella* in beef and poultry carcass rinses was developed. It reduces time for confirmed positive results to 48 hours, compared to 5-7 days for culture methods. • Progress in reducing pig odours. (See Highlights). • Development of a rapid test for mastitis in dairy cows. • Six short manuals on municipal management insights and practices are constantly in demand and out of print. • Ontario agri-food exports increased by 15% between 2000 and 2001. • Continuing consumer confidence in the food supply. • A breakthrough in production of quality white, food-grade corn creates the potential to replace imported corn for tacos and tortillas. • New winter canola hybrids increased yields by 30% over currently grown open-pollinated cultivars and renewed interest among growers in winter canola. • Release of very early plum varieties extends the fresh market season. • Ontario researchers were major contributors to a series of papers in Proceedings of the National Academy of Science in the U.S. documenting minimal effect of Bt corn on monarch butterflies. • An on-farm food safety program developed, implemented and analysed for the Ontario Greenhouse Vegetable Growers in Ontario is now the standard for produce-related, on-farm food safety programs in North America. This HACCP-based system was designed to reduce the potential for microbial contamination along the entire production and distribution process. This work is now being expanded to the Ontario Fruit and Vegetable Growers' Association (OFVGA), the Ontario Processing Vegetable Growers (OPVG) and others within the farm-to-fork food safety system. To remain competitive in national and international markets, all levels of the Ontario fruit and vegetable industry must strive to minimize microbial and chemical contamination. • Alternatives to conventional insecticidal controls, such as trap crops, resistant varieties, oviposition disruption and "reduced risk" insecticides were developed for a number of pests of Ontario crops. This slows the development of insecticide resistance and provides alternatives for deregistration of old pesticides. Methods to reduce pesticide use also reduce overall exposure to insecticide residues and contribute to the safety of Ontario food products.

2. EDUCATION PROGRAM

2.1 Diploma Education
Kemptville College, Alfred College, Ridgetown College and Guelph Campus

2.1.1 Introduction

The year has been a positive one, particularly with respect to OMAF supported education.

Enrolments in the broad agriculture and horticulture Associate Diplomas have remained stable. This reflects, in our view, two things. First, there is increasing need for sophisticated, but more targeted offerings. Second, the constraints which a traditional two-year residential experience impose, particularly on people already in the workforce, mean that we need to complement the traditional Diploma Program with a range of other, more flexible, skills training.

In 2001/2002 we took steps to do both.

During the year, decisions were made to restructure the diploma programs. This will include decentralising the general agriculture and horticulture diplomas to the regional campuses, and starting new Associate Diplomas, from Fall 2003, in environmental management (at Ridgetown), turf management (at Guelph) and food, nutrition and risk (at Kemptville). As detailed below, we are also closing some offerings, where demand is weak, and wrapping the equine teaching back into the agriculture diploma at Kemptville.

These changes will make significant improvements in impact per dollar expended for the rural industries.

Each of the regional campuses has set out the year's highlights below. Alfred continues to grow modestly and has an assured, and expanding, place in Francophone education for Ontario. Contributing to this, $778,000 has been pledged by Human Resource Development Canada. This year saw some significant steps towards more strongly aligning skills teaching, industry service and research at Alfred, and environment and waste treatment will become one of Alfred's core strengths in such an alignment. At Kemptville, we note that the Canadian Society of Nutrition Management will accredit graduates from the new Associate Diploma in Food Nutrition Risk, as it has accredited past graduates in nutrition. At Ridgetown, numbers will increase significantly in the general agriculture and horticulture diplomas and the campus will grow into national stature in the area of rural environmental management: education, service to industries, and applied research. Again it is pleasing that the Veterinary Technicians who graduate from Ridgetown exceed, sometimes very significantly, the North American average in the Veterinary Technology National Examinations.

The University will continue to use OMAF money wisely for education to benefit rural Ontario, and to leverage this resource for wider impact.

One example of leverage is to build upon existing strengths to add to other types of training, which might be funded from other sources or from students' fees. We offer short courses and certificates, aimed for direct impact on rural producers and agri-food industries.

The table below illustrates the output of short-course education from the OAC multi-campus system for the year.

Campus	Number of Student Days Taught in Short Courses, Certificates etc
Guelph	33,790
Alfred	7,062
Kemptville	29,005
Ridgetown	19,148
Total	**89,005**

To re-state the significance of this leverage: this year the OAC system taught the equivalent of 89 thousand people for a day, or 742 full time student equivalents through short courses of various kinds. The impact, direct or indirect, of the OMAF education program through OAC this year is thus the placement of the equivalent of 1800 better-educated people into rural industries, 1050 through diplomas and 742 through other programs.

Another example of leverage from the OMAF contract is educational programs offered in partnership with other institutions. These are in areas which directly benefit rural industries or, by increasing student numbers, they benefit the student life at regional campuses, and the regional communities in which the campuses are sited. Our partnerships are described below. These will increasingly become strategic and focussed.

Through their dedication, our staff have contributed to OAC's new catch-phrase: Growing the future / cultivons l'avenir.

2.1.2 Alfred College

- Enrolment at Le Collège d'Alfred of full-time diploma students was close to the previous year - 109, a small decrease of two. However, the six year average is 104, and for the upcoming year, all indications based on confirmed registrations received to date are that the Collège will have its best year ever, with a full-time diploma enrolment of about 135 students. This will occur despite the dropping of the Horticulture Diploma program in the 2002/03 academic year. There were 60 graduates this past year, in the Agriculture, Horticulture and Food diploma programs, as well as 18 in the popular Veterinary Technician program (developed in conjunction with Collège Boréal). All graduates have since been employed.

- As with the Vet Tech program, much work in the educational field at Alfred is being undertaken cooperatively with various partners, which include McGill University (Food Processing Technology Program), Collège Rosemont (Distance Horticultural Program), Prescott & Russell Adult Education Centre and the Prescott Apprenticeship and Training Centre (Certificates in such areas as Food Worker, Farm Worker, Landscape Worker, etc.). An exciting opportunity to coordinate a national $1.5 million food security training program is currently being negotiated with the Canadian Federation of Agriculture.

- In order to better address the needs of its community, and in keeping within the terms of the new OMAF/UofG Agreement, Collège d'Alfred has initiated a number of short programs and certificates, on its own, or in conjunction with other partners. This commitment of Alfred is reflected in the OAC New Strategic Plan and is seen to complement the regular diploma programs, which Alfred will continue to offer in French.

- In that regard, for the first time in the life of the Collège, Human Resources Development Canada has agreed to contribute a much-needed $778,000 over three years, to enable Collège d'Alfred to develop some of its new initiatives. $350,000 of this funding has already been received in this fiscal year. The monies are from a special fund distributed through the Ontario Ministry of Training, Colleges and Universities (MTCU), for Francophone colleges.

- Alfred has had much success in obtaining international development contracts, some of which are collaborative with other institutions. Work related mainly with agricultural education and food technology, is currently occurring in the Comorros Islands, Morocco, Equatorial Guinea, and there are two separate projects in the Congo. On another international front, students from the International Development diploma program have spent time in both Romania and the Dominican Republic, as part of their studies, and during the course of the year, two students visited Congo on assignment to the CIDA-funded projects mentioned previously.

- Collège d'Alfred's four researchers are working in many diversified areas. One major educational component of their work is providing their expertise in conjunction with the Alfred-based Ontario Wastewater Centre, in giving approximately thirty courses a year at three locations in Ontario, lasting between one to five days, mainly to managers of (waste) water treatment systems. Some of the other more significant projects being worked on, which are supported by funding outside the OMAF/UofG Agreement, include ways of treating landfill leachate, research into artificial wetland usage, a project to develop a technique to reduce ammonial in artificial wetlands, an environmental impact study of biosolids, a feasibility study of biological methods for controlling pest insects in dairy farms, a project to develop an independent treatment system to take phosphorus from septic tank water, and research into finding an effective and economical way of producing ethanol from whey.

- New diploma courses in Herbs and Aromatic Plant Production were introduced and well received this past year.

- The Collège received its second refugee student under the Sponsorship program of the local WUSC committee. This group last year was deservedly recognized by WUSC with a prize for being the most dynamic local committee in Canada.

- Alfred received, for the winter semester, 3 foreign students in Agrotourism from Bioterra University, Romania, under a new student exchange program developed with that institution. This program will continue in 2002/2003.

2.1.3 Kemptville College

- Kemptville College is in the process of making major changes to the programs being offered.

- The Equine Studies Diploma will be taking their last intake of students this fall 2002. The program is being restructured and will actually be offered as an option in the Agriculture Diploma. The Diploma was originally offered in this manner and it was felt that during the past five years too much emphasis was directed toward riding lessons and chores. The decision was made to return to the core Agricultural curriculum and offer electives, which would become the Equine Option. Riding will be a Certificate offering as non-credit courses towards a Diploma.

- The Food and Nutrition Management Diploma has been changed and while still keeping it's accreditation through the Canadian Society of Nutrition Management, more emphasis has been placed on the food safety and risk management issues.

- The Agriculture and the Horticulture Diplomas have been going through the process of developing performance standards which in turn will lead into a major curriculum review. This process should be completed by August 2003.

- In 2001/2002, the Business Development Centre (BDC) offered 17 apprenticeship and certificate programs and 39 specialty courses. The BDC also manages the College bookstore. The BDC delivered a total of 18,436 student days to train or retrain farm operators, trades people, rural business operators, labourers, home owners and high school youth in the following domains: dairy, sheep, equine, health care food services, nutrition, wellness, welding, farm machinery, health and safety, oil and gas heat, motive power and a broad range of rural industrial technologies. 18,436 student days is equivalent to about 156 full time diploma students at 120 days per year per diploma student.

- The Nutrition, Wellness and Food Safety programs will rely more on the Ottawa market than Development funding sought from CARCI (Canadian Agricultural Rural Communities Initiative) to organize 3 round tables to assess new training programs in food safety, small scale food processing and direct access to markets. Canadian Food Inspection Agency (CFIA) will be an important partner. This effort complements the work done in the new Food Risk Diploma.

- Four Equine Certificate programs are reorganized to constitute a fee-paying option to the Agriculture Diploma in 2003. Specialty courses and riding camps have traditionally been quite academically specialized. A more recreational (agro-tourism) set of activities will be assessed through surveys including both the regional and the wealthy segments of the Ottawa population.

2.1.4 Ontario Agricultural College (OAC)

- There were 184 OAC diploma students who graduated in 2002, an increase of 32 over the previous year.

- Diploma enrolment declined 7% from 2000/2001, but was still above 1999/2000 levels. The decline was mainly due to lower registrations in the fall of 2001.

- Attrition among diploma students at Guelph was only 8% among the students entering in 2000, which was much below the 20% for the 1999 cohort.

2.1.5 Ridgetown College

- Ridgetown College graduated 130 students in 2001/02 from the three diploma programs in Agriculture, Horticulture and Veterinary Technology with excellent employment opportunities. The Alternative Veterinary Technology Diploma program that was initiated in the Fall of 1998 is currently in its fourth cycle with 62 students currently enrolled as Juniors or Seniors. The Alternative program was developed and initiated as a way to accommodate additional students to this extremely popular program. The second graduation for this program will take place in September of 2002, with 32 potential graduands. The first graduates of the program in 2001 performed well on both their externships as well as on the Veterinary Technician National Examination (VTNE). This examination is written by technicians all over North America in order to become registered or licensed.

- Graduates of the fall/winter program also continue to perform exceedingly well on the VTNE. The examination results are broken down into seven domains, including Anesthesia, Surgical Preparation and Assistance, Laboratory Procedures, Radiography and Ultrasound, Office and Hospital Procedures, Pharmacy and Pharmacology, and Animal Nursing. In 2001, the averages in each domain ranged between 1.38% and 61.7% above the North American average.

- A new diploma program will be introduced in the Fall of 2002. The Environmental Management diploma will herald a new direction for this college with the acknowledged environmental background the college has promoted for years. This new program is designed to attract a wider array of students to complement our Agricultural, Horticultural and Veterinary Technology strengths.

- Ridgetown is currently forming alliances that will allow college students to experience the educational benefits of international travel. Holland has been the centre of many new innovations especially dealing with greenhouse and livestock production areas. Our liaison personnel are working out details to pave the way for our students to spend a summer semester in a foreign country - and get educational credits for their efforts.

- The Ag Business Centre opened in May 2001 as a unique partnership between Agri-Development Kent, Ridgetown College and the Kent Federation of Agriculture. It was created to cultivate other partnerships to assist with rural economic development opportunities and ideas. Successful projects include the Farm Link initiative, which is exploring the feasibility of next generation marketing cooperatives, and AGRI Focus, a careers in agriculture partnership with Rural Youth Job Strategy and four local school boards.

- The Ontario Pesticide Training and Certification Program (OPTAC) has seen a slight decrease in the number of applicants to this provincially mandated program for certifying commercial pesticide applicators, due in part to pesticide restrictions in some municipalities resulting from environmental concerns.

- The Livestock Medicines Education Program has just completed its second year of operation, with a total of approximately 6,000 registrations during that time. Certification is expected to be mandatory for the purchase of over-the-counter livestock medicines by April 2003, which potentially means a large number of farmers will participate in the coming year.

- Farm Market News programming is now in its eleventh year. Market data collected is provided to commodity associations through long-term contracts, to various media as customized daily market reports, and to consultants and market analysts for use in their studies. AgriLink, a popular weekly digest of agricultural news, is now in its third year of serving southwestern Ontario, with over 500 individual and media subscribers.

- The Business and Training Group at Ridgetown successfully offered a wide range of professional development programs to the industry in 2001-2002. These programs identified as the Excellence in Series provided the industry with an opportunity to gain over 70 Certified Crop Advisor (CCA) credits.

- The Veterinary Medical Receptionist certificate program at Ridgetown expanded to a two-term (8 months) program in the fall of 2001 with 27 participants. This change was recommended by the program advisory committee in 2000. Also, on the recommendation of the committee, the name of the program has been changed to the Veterinary Medical Office Assistant program effective for the fall of 2002. Enrolment in the program will exceed 35 students this fall.

- Ridgetown College faculty and staff and advisory committees have completed the preliminary work leading to the introduction of three post-diploma certificates for the fall of 2002 in the areas of Seed and Grain Technology, Agri-Business Management and GIS (Global Information System).

3.3 Diploma Education Budget

Table 3.3.1: Diploma program budgets and actual expenditures, 2001/2002 (E '000)

Program	Alfred			Kemptville			Ridgetown			Guelph			Totals		
	2001 Actual	2002 Budget	2002 Actual	2001 Actual	2002 Budget	2002 Actual	2001 Actual	2002 Budget	2002 Actual	2001 Actual	2002 Budget	2002 Actual	2001 Actual	2002 Budget	2002 Actual
Agriculture	699	673	707	652	691	681	597	594	697	859	1,273	969	2,910	3,231	3,054
Horticulture	209	193	291	539	537	559	519	529	527	597	599	702	1,760	1,759	2,079
Food & Nutrition Management	107	259	259	569	594	594	--	--	--	--	--	--	676	773	853
Equine	--	--	--	573	765	699	--	--	--	--	--	--	573	765	699
Ag Tech	--	--	--	--	--	--	559	569	521	--	--	--	559	569	521
Overhead	519	569	529	459	457	445	299	397	299	459	359	519	1,736	1,884	1,859
Totals	1,592	1,703	1,977	2,292	3,043	2,979	2,013	2,089	2,043	2,915	3,229	2,979	8,259	9,173	9,019

The Colleges of Wilfrid, Kemptville and Bridgetown are funded for three primary functions: namely, diploma education, applied research and continuing education and services. Table 5.2.1 breaks down the expenditures by program.

Table 5.2.1 2001/2002 Colleges Expenditures ($ '000)

	Wilfrid		Kemptville		Bridgetown		Total	
	2000	2001	2000	2001	2000	2001	2000	2001
Diploma Education[1]	1,202	1,275	2,288	2,354	2,015	2,059	5,505	5,688
Research[2]	202	208	1,115	1,149	1,089	1,155	2,407	2,512
Continuing Education[3]	654	708	1,275	1,745	2,227	1,859	5,156	5,312
Services:								
Shop Revenue (costs)								
- additions	114	81	657	681	456	274	655	755
- utilities	654	654	x	x	x	x	654	654
Food Expenditures	2,157	2,274	7,089	7,245	7,089	7,443	16,335	16,962
Revenues	1,114	1,259	3,655	3,951	3,654	3,914	8,357	9,014
(Shortfall) Surplus	1,059	1,215	3,567	3,806	3,651	3,456	8,387	10,319
Expenditures	(110)	(140)	78	(100)	222	106	(70)	(100)

[1] Utility / cost-shared by Ontario Faculty / expenditure.
[2] Provides enrollment costs.
Note: Program costs include allocated administrative costs.

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Attrition Rates for 2000 and 2001 Diploma Cohorts

Table 2.3-3: 2000 Cohort

	Alfred	Kemptville	Ridgetown	Guelph	Total
# Enrolled in Fall -00	75	130	135	190	552
# Enrolled in Fall 01	62	106*	121	155	454
# Graduated	60	93	106	184	443
Attrition in Year 1	17%	28%	10%	2%	12%
Attrition in Year 2	2%	15%	12%	6%	9%
Total Attrition	**19%**	**39%**	**24%**	**8%**	**28%**

* Adjustment was made to the 2001/2002 Annual Report

Table 2.3-4: 2001 Cohort

	Alfred	Kemptville	Ridgetown	Guelph	Total
# Enrolled in Fall 2001	46	117	149	161	473
# Enrolled in Fall 2002	41	80	141	110*	362*
Attrition Year 1	11%	23%	5%	32%*	10%*

* This number only reflects the number of returning students who pre-registered for courses for Fall 2002. More accurate enrolment data will be available September 20, 2002. In the 2000/2001 Annual Report, the attrition rates using pre-registration numbers, was shown as 23% for the 2000 cohort at Guelph Table 2.3-3 shows actual attrition for the 2000 Guelph cohort was only 2%. Obviously, using pre-registration numbers at Guelph overestimates attrition in the 2001 cohort.

Attrition rates for the Vet Tech Program at Ridgetown

The summer Vet Tech program is a three-year course and the numbers cannot be included with the courses that run for only two years. The following table summarizes the fall enrolments for the two streamers of this program that are now underway.

Summer Vet Tech Cohorts

	1998	1999	2000*	2001	2002
# Enrolled in Fall 1998	36				
# Enrolled in Fall 1999	25	40			
# Enrolled in Fall 2000**	24	34			
# Enrolled in Fall 2001		31		40	
# Enrolled in Fall 2002				30	46
Graduated	24	31			
Attrition in Year 1	31%	15%		25%	
Attrition in Year 2	4%	9%			
Attrition in Year 3	0%	0%			
Total	33%	22%			

* No intake of new students in the Fall 2000 (due to space).

** Actual number of students versus estimated last year.

Financial Efficiency

X Table 2.3-6 details costs per student at the four Colleges. Total cost figures at each location were calculated on the same basis. Cost differences between locations can be attributed primarily to differences in student numbers.

Table 2.3-6: Diploma Program Costs (includes Full Time and Part Time students)

	Alfred		Kemptville		Ridgetown		Guelph		Total		Average ($)	
	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02
Total Cost/College ($ '000)	1,641	1,875	2,268	2,300	2,613	2,630	2,046	2,205	8,568	9,010		
# Students	118	114	238	223	323	341	381	366	1,060	1,044		
Total cost/student ($)	13,911	16,447	9,529	10,314	8,090	7,713	5,370	6,025			8,083	8,630
Student fees paid ($ '000)	464	481	1,165	1,135	1,241	1,269	1,404	1,308	4,274	4,193		
OMAF cost/College ($ '000)	1,178	1,394	1,103	1,165	1,372	1,361	600	600	4,253	4,520		
OMAF cost/student ($)	9,979	12,228	4,634	5,224	4,248	3,991	1,575	1,639			4,012	4,330

Table 2.3-7: 2001/2002 Value of Diploma Student Assistance

	Alfred		Kemptville		Ridgetown		Guelph		TOTAL	
	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02
Student Awards ($)	36,400	38,150	35,275	35,650	37,250	47,225	48,900	63,700	157,825	184,725
Value of Awards ($) per student	317	374	148	160	115	138	128	174		

* Forecast

Quality of Programs

Table 2.3- 8: Employment statistics for graduates in 2001/2002 May survey
(percentage of graduates employed)

	Alfred %		Kemptville %		Ridgetown %		Guelph %	
	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02
Agric.	100	100*	100	100	100	100	93	95
Hort.	100	100	100	100	100	100	87	90
Food	100	100	95	100	--	--	--	--
Equine	--	--	90	95	--	--	--	--
Vet. Tech.	--	--	--	--	94	80	--	--

* Includes one student who passed away having just graduated

2.4 Continuing Education (C.E.)

X Activities for Continuing Education are almost entirely self-funded through contracts and certificate courses (including residential programs of up to one academic year).

Table 2.4-1: 2001/2002 Actual Expenditures for C.E. ($ =000)

	Alfred		Kemptville		Ridgetown		Total	
	00/01 Actual	01/02 Actual	00/01 Actual	01/02 Actual	00/01 Actual	01/02 Actual	00/01 Actual	01/02 Actual
Total Revenues	643	658	1,479	1,437	1,883	1,689	4,005	3,784
Total Expenditures	655	708	1,676	1,745	1,814	1,732	4,145	4,185
Surplus (Deficit)	(12)	(50)	(197)	(308)	69	(43)	(140)	(401)
Revenue Components:								
Base funding	298	298	75	80	75	70	448	448
C.E.	282	293	1,078	875	1,597	1,397	2,957	2,565
Conferencing/Facility Rentals	63	67	326	482	211	222	600	771
Total Revenue	**643**	**658**	**1,479**	**1,437**	**1,883**	**1,689**	**4,005**	**3,784**

Table 2.4-2: Student Days and Range of Fees/Student Day for C.E. Courses.

	Alfred		Kemptville		Ridgetown		Total	
	00/01	01/02	00/01	01/02	00/01	01/02	00/01	01/02
# of Student Days (6 hrs/day)	7,510	4,847	16,696	18,436	18,339	17,759	42,545	41,042
Fees/day ($)	23-200	23-200	70-95	70-95	76 avg.	72 avg.	--	--
Diploma Student Equivalent*	62	40	139	154	153	148	354	342

* Calculation: Divide number of student days by 120.

2.4.1 Quality Evaluation

- All training programs have participant evaluations for completion at the program conclusion.
- Standardized course assessments for similar programs.
- Needs assessment C input from agri-food sector and C.E. council, community councils.

2.4.2 Effectiveness of Program Delivery

- Client evaluations and support.
- Repeat business (returning clientele).
- Follow-up with clients of conferences.
- Joint initiatives with industry too numerous to list, and expanding.

2.5 VCEP

2.5.1 An Overview

The VCEP agreement provides annual funding to the Ontario Veterinary College (OVC) to:

- "meet the continuing need for veterinary graduates who have a high level of appropriate clinical experience in veterinary medicine to service Ontario animal owners";
- "meet the continuing need for an animal referral hospital which will service satisfactorily Ontario's veterinary practitioners and animal owners".

2.5.2 Resource Allocation

In 2001/2002, base funding supported the three approved programs:

- Clinical Education;
- Externship; and
- Doctor of Veterinary Science (DVSc).

VCEP funding is critical to the overall operations of the College. It complements the budget received from the MTCU and allows the College to sustain the quality of its clinical teaching and service programs.

2.5.3 2001/2002 Budget and Expenditures

The total available VCEP budget in 2001/2002 was $4,763,625. As of April 30, 2001 expenditures totalled $4,692,128 leaving a surplus of $71,497. Table 2.5.3-1 provides details on the breakdown of the budget and expenditures across the Clinical Education, Externship and DVSc. Programs. The MTCU funds that support these programs are presented to show the total funding picture for the three programs.

Table 2.5.3-2 provides details on the breakdown of the budget and expenditures for the three academic departments and the VTH in support of the College's Clinical Education Program.

The expenditures and revenue on the Ministry of Training, Colleges and Universities (MTCU) side are presented as well to describe the total financial pictures.

In 2001/2002 the combined MTCU and VCEP total expenses for the Clinical Education Program were $16,690,518. VTH total revenue (income plus cost recovery) was $9,416,163. VTH revenue represented 56% of the funding required to deliver the Program.

2001/2002 Budget and Expenditures

As of April 30, 2002, expenditures totalled $4,692,128 leaving a surplus of $71,497. The table provides details on the break down of budget and expenditures across the Clinical Education, Externship and DVSc programs.

Table 2.5.3-1 VCEP Expenditures, Revenues and Budget 2001/2002

Source of Funding	Vet Teaching Hospital	DVSc	Pathobiology	Clinical Studies	Population Medicine	Total
VCEP						
DVSc	–	511,165	–	–	–	511,165
Externship	–	–	–	291,714	–	291,714
Clinical Education	2,623,787	–	42,327	721,239	501,896	3,889,249
Total Expenses	2,623,787	511,165	42,327	1,012,953	501,896	4,692,128
Available Budget	2,652,312	511,165	42,541	1,018,682	538,925	4,763,625
Surplus (Deficit)	**28,525**	–	**214**	**5,729**	**37,029**	**71,497**
MTCU						
DVSc	–	221,622	–	–	–	221,622
Externship	–	–	–	–	–	–
Clinical Education	875,245	–	–	523,764	94,952	1,493,961
Total Expenses	875,245	221,622	–	523,764	94,952	1,715,583
Available Budget	668,787	341,748	–	447,887	96,908	1,555,330
Surplus (Deficit)	**(206,458)**	**120,126**	–	**(75,877)**	**1,956**	**(160,253)**
Special Grant						
DVSc	–	200,000	–	–	–	200,000
Externship	–	–	–	–	–	–
Clinical Education	666,643	–	–	–	–	666,643
Total Expenses	666,643	200,000	–	–	–	866,643
Available Budget	666,642	200,000	–	–	–	866,642
Surplus (Deficit)	**(1)**	–	–	–	–	**(1)**
All FundingSource						
DVSc	–	932,787	–	–	–	932,787
Externship	–	–	–	291,714	–	291,714
Clinical Education	4,165,675	–	42,327	1,245,003	596,848	6,049,853
Total Expenses	4,165,675	932,787	42,327	1,536,717	596,848	7,274,354
Available Budget	3,987,741	1,052,913	42,541	1,466,569	635,833	7,185,597
Surplus (Deficit)	**(177,934)**	**120,126**	**214**	**(70,148)**	**38,985**	**(88,757)**

Note: Table from VCEP Annual Report, 2001/2002 (page 2)
MTCU and Special Grant funds are reported as expenses and budgets allocated to the clinical education program only.
Expenses and budgets are not VTH revenue.

In 2001/2002 the combined MTCU and VCEP total expenses for the Clinical Education Program were $16,890,518. VTH total revenue (income plus cost recovery) was $9,416,163. VTH revenue represented 56% of the funding required to deliver the Program.

Table 2.5.3-2 Budget and Expenditures for all areas of the College for the period May 1, 2001 to April 3, 2002

	VCEP								MTCU			SPEC GRANT		Total Support of Clinical Education Program
	Hospital	Adj. Acct.	DVSc	Extern-ship	Patho-biology	Clinical Studies	Population Medicine	Total VCEP	Hospital	DVSc	Academ Depts.	Hospital	DVSc	
Personnel														
Total Personnel Expenses	2,867,368	-	511,165	245,799	42,327	721,238	483,033	4,810,880	6,049,841	221,622	616,719	369,739	200,000	11,478,799
Non-Personnel														
Total Operating	36,493	-	-	40,230	-	-	9,144	85,867	3,426,136	-	-	-	-	3,512,003
Total Internal	511,760	-	-	5,695	-	-	-	517,454	780,063	-	-	-	-	1,297,517
Equipment	-	-	-	-	-	-	9,719	9,719	72,802	-	-	296,904	-	379,525
Total Renovations	68,227	-	-	-	-	-	-	68,227	37,534	-	-	-	-	30,693
Total Non-Personnel Expenses	616,479	-	-	45,925	-	-	18,863	681,267	4,241,567	-	-	296,904	-	5,219,738
Total Clinical Education Program	2,623,787	-	511,165	291,714	42,327	721,238	501,896	4,892,127	10,291,408	221,622	616,719	666,643	200,000	16,890,518
Income to VTH														
Cost Recovery	-	-	-	-	-	-	-	-	1,575,668	-	-	-	-	1,575,668
Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small Animal	-	-	-	-	-	-	-	-	4,550,517	-	-	-	-	4,550,517
Large Animal	-	-	-	-	-	-	-	-	2,949,958	-	-	-	-	2,949,958
Field Service	-	-	-	-	-	-	-	-	201,579	-	-	-	-	201,579
Other	-	-	-	-	-	-	-	-	138,641	-	-	-	-	138,641
Total Revenue	-	-	-	-	-	-	-	-	7,840,695	-	-	-	-	7,840,695
Total Income to VTH	-	-	-	-	-	-	-	-	9,416,163	-	-	-	-	9,416,163
Net Clinical Education Program	2,623,787	-	511,165	291,714	42,327	721,238	501,896	4,892,127	875,245	221,622	616,719	666,643	200,000	7,274,355
Budget Available	2,652,312	-	511,165	293,902	42,541	724,780	538,825	4,763,625	668,707	341,748	544,795	666,642	200,000	7,185,597
Balance Agnt 30/02	28,525	-	-	2,188	214	3,542	37,029	71,498	(206,458)	120,126	(71,923)	(1)	-	(88,756)

2.5.4. Clinical Education Program

In compliance with objectives a), b), c), d) and g) of the VCEP Agreement, the College delivers a Clinical Education Program. To support this program, VCEP base funding is allocated to the VTH and the three academic departments involved in clinical education: Pathobiology, Clinical Studies and Population Medicine.

The Clinical Education Program is the largest component of the VCEP agreement. This program supports the clinical training of DVM students within the VTH. Clinical experience is gained in the various VTH services that include clinics in the large animal and small animal areas, and a field service program. Additionally, the Hospital offers referral and emergency services to veterinary practitioners and the animal-owning public for 24 hours a day, 365 days of the year.

Maintenance of Accreditation
To continue to meet the accreditation requirements of the Canadian and American Veterinary Medical Associations as well as the College of Veterinarians of Ontario.

Externship Program

Offer an externship program of approved clinical experience with a private veterinary practitioner or a relevant public/private sector organization.

2.5.5 DVSc Program

Offer an advanced clinical training program entitled Doctor of Veterinary Science in various medicine and health maintenance disciplines.

During the past year 9 new DVSc students were enrolled (6 funded by VCEP). Seven VCEP funded DVSc students completed the program. The details of enrolment and disciplines are shown in Table 2.5.1.

Table 3.2.5.1. DVM Enrollment and Graduations During 2001/2002

Department	Enrollment	Graduations
Anatomic Pathology	6	1
Clinical Pathology	2	1
Other	1	0
Total Pathobiology	**9**	**2**
Companion Animal	9	1
Farm Animal	7	0
Other	4	1
Total Clinical Studies	**10**	**2**
Total Biomedical Sciences	**1**	**0**
Theriogenology	2	0
Epidemiology	1	0
Health Management	3	3
Total Population Medicine	**6**	**3**
Total College	**36**	**7**

3. Laboratory Services Division

3.1 Highlights

- The Laboratory Services Division (LSD) provides testing and diagnostic services in support of CMHW's regulatory and disease surveillance programs under the terms of the CMHW/ LSD Enhanced Partnership. In addition, LSD is expected to generate sufficient funds to replace and upgrade its infrastructure so the adequate testing capabilities will be available to meet CMHW's testing requirements. In order to generate extra revenue funds, LSD provides testing services on a fee-for-service basis to government, universities and the veterinary and agri-food industry.

- The Animal Health Laboratory performed approximately 350,000 tests in support of disease surveillance while the laboratories at XY Stone Road performed approximately 600,000 tests in support of the regulatory programs.

- During 2001/2002, activities focused on improving effectiveness. A new laboratory information system was installed to manage the sample and data flow across the testing units at XY Stone Rd. A number of large and small improvement projects were initiated. The sample and data handling at the Animal Health Laboratory was reviewed and improvements will be initiated in 2002/2003. Improvements obtained in the previous year are now part of operation.

- Strong marketing efforts continued with the concentration on the analytical and microbiological testing services. Total revenue, including services to LSD clients, increased by 10% to a total of $8 million. A small number of large short-term projects contributed to the increase. This trend is expected to continue into the next year.

- Excellent financial results allowed Laboratory Services to reinvest $2.1 million in equipment and infrastructure. A large portion of the funds was allocated to equipment replacement across all laboratory units. The equipment improvements enabled LSD to introduce the new testing capabilities that are required to support CMHW's programs.

- CMHW's testing requirements have continued to change. The scope of chemical testing has increased. Short-term investigations are more frequent. The need for an extensible result has increased the pressure on turnaround time, rapid confirmation and reporting mechanisms and precludes the use of batching. These changes will increase the cost for testing and they will drive the need to reinvest in technology to support rapid testing procedures.

3.2 Budget

The Laboratory Services Division (LSD) provides testing and diagnostic services to public and private clients in the agriculture, food and veterinary industries. This report deals with those services that LSD provides under the terms of the CMHW/ LSD Agreement. The report describes the testing services provided to the Food Industry Division (FID) and the Agriculture and Food Division (AFD) and the diagnostic services carried out on behalf of the Livestock Technology of AFD.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

- [illegible]
- [illegible]

1.1 Performance Measures

Performance Measures (₹ '000's)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]

3.5 Improvement Projects

As part of a long-term plan for improving efficiencies, LS carried out a number of projects aimed at improving processes.

The Sapphire laboratory information system was implemented in order to automate the sample tracking and record keeping at 95 Stone Road. On a daily basis, the laboratories located at 95 Stone Road receive and process thousands of samples. Test results for the OMAF programs are reported electronically to the FSDSS throughout the day. The Sapphire system manages the flow of information for all of the regulatory testing units with the exception of the dairy unit. The latter will be reviewed in 2002/2003. The Sapphire system complements "VADDS", the computer system that supports work processes for the AHL. This major upgrade brings the operation up to the same standards as other major testing laboratories.

The sample receiving and data entry processes in the AHL were reviewed with the assistance of a consultant. The purpose of the review was to identify strategies for speeding up the processing of samples and data without increasing staff. The review team identified a number of bottle necks in the system and made recommendations for process improvements. These will be implemented in 2002/2003.

3.6 Accommodation and Planned Upgrades

Animal anatomical waste disposal has become a pressing problem for the AHL. The AHL has traditionally used dead stock operators to remove the bulk of the anatomical waste generated as a result of diagnostic activities; the remaining materials have been incinerated. Dead stock operators now charge a disposal fee and they have become more selective in the waste that they will accept. One of the two incinerators available at University of Guelph has failed. These factors have led to increased costs for disposal and a strain on the AHL's disposal capabilities. The University of Guelph has commissioned a study and recommendations for a new waste disposal system will be forthcoming in 2002/2003.

Repairs and upgrades were made to the post mortem facilities at Guelph and Kemptville to improve the safety of handling large animals. The Kemptville receiving area for carcasses was also upgraded to improve security and allow clients access to refrigerated storage during off hours.

3.7 Quality Assurance

Laboratory Services is subject to audits on a regular basis for general quality standards as well as for individual tests. During 2001/2002 LS maintained its ISO9001 status and certification for tests critical to the delivery of the testing services to OMAF. The Animal Health Laboratory maintained its accreditation by the American Association of Veterinary Laboratory Diagnosticians.

The pesticide residue laboratory at 95 Stone Road passed the preliminary audit for GLP level testing in 2001. GLP projects carried out in 2001/2002 will be audited in 2002 and full approval is expected in the summer of 2002.

3.8 Research Activities & Innovation

3.8.1 Research

While Laboratory Services is not a research unit, it does carry out method development and validation projects and provides analytical testing support for research projects. LS scientists were successful in obtaining research funding for 13 new projects during 2001/2002. Ontario Pork funded three projects. Funds were also obtained under OMAF food safety and special research initiatives. These projects will enable LS to continue to introduce new and improved testing capabilities for both diagnostic and food safety testing.

3.8.2 Innovation

There is an expectation under the general terms of the contract that Laboratory Services will generate sufficient funds to replace equipment and to introduce new technology so that over time its capabilities will keep pace with technological change. During 2001/2002, LS was able to reinvest in both replacement and new technology. In addition to the general replacement of aging equipment, two major investments are worth noting.

LS continued its planned replacement of instrumentation for chemical analysis with the purchase of additional gas and liquid chromatography equipment plus two fluorescence detectors. A pool of standardized equipment is being created to improve flexibility, reduce downtime and reduce the amount of staff time being spent on repairs. This is in response to OMAF's needs for guaranteed and rapid turnaround times for an expanded scope of chemical testing.

Investments were made in new equipment to support DNA/RNA based testing in the Animal Health Laboratory. This included a Gel documentation system, a system for automating nucleic acid preparation, a thermocycler, a real-time lightcycler and analytical software. This is in response to industry needs for more rapid and specific information on microbial.

3.8.3 New Capabilities

The new testing introduced is illustrated in the following table.

Table 3.8.3-1: New Methods introduced during 2001/2002

Testing capability	Area supported by new capability
Immunohistochemical screening for bovine spongiform encephalopathy and transmissible gastroenteritis	Disease surveillance
BVDV testing extended to serum and bulk tank milk	Disease surveillance
Genotyping was expanded to include a number of viral and other infectious agents	Disease surveillance
Swine influenza serology was expanded	Disease surveillance
Testing for porcine reproductive and respiratory syndrome virus was expanded	Disease surveillance
Selenium testing in blood was set up as an alternative to shipping samples out of province	Disease surveillance
ELISA based screening for plum pox virus	Federal-provincial programs
Extended confirmation of drug residues in tissue samples	Food safety programs
GLP level pesticide residue testing	Support for minor use pesticide registration
PCR based screening for Cryptosporidium	Food safety programs
Colorimetric method for enumeration of *E. coli*, coliform and aerobic organisms	Food safety programs
MPN method for enumeration of *Listeria monocytogenes* in food	Food safety programs
Shigella detection and enumeration in food	Food safety programs
Reveal ELISA method for confirmation of VTEC in food	Food safety programs
Meat species verification and quantification of adulteration levels in meat	Food safety and quality programs

3.9 Services Provided to OMAF

3.9.1 Food Industry Division Programs

The testing services provided by Laboratory Services support the provincial Milk Act, Meat Inspection Act, Edible Oils Products Act, Farm Products Grades and Sales Act and the Food Safety and Quality Act, 2001. The volume and type of testing is determined by the appropriate OMAF program manager. The tests vary in complexity from the identification of a nematode to a broad based pesticide residue screen. The accompanying table gives the volume of testing by program and by type.

Volume of Testing for FID and Other Divisions

Division	Program	Volume of Testing
FID	Meat	17,315
FID	Horticulture	1,679
FID	Dairy	842,037
ARD	R&M*	299
Fed-Prov	Great Lakes Initiative	62

* Resources and Management

During 2001, the provincial food safety system was audited. Prior to the audit, study samples were batched together to make the most efficient use of staff and equipment, but this delayed the reporting of results. LS now tests and reports results as samples are received for the ready-to-eat commodities. This has increased the cost for low volume tests, but the change allows OMAF to take action if an incidental finding on a study suggests a health hazard.

During 2001/2002, testing for the meat program expanded to include carbadox and the sulfamethazine testing increased dramatically. The number and scope of drug residue confirmation tests also increased for the meat program. For the horticulture program, heavy metal analysis increased, and several investigations were conducted. New protocols were set in place for dealing with the confirmation of pathogens and for reporting results on ready-to-eat commodities.

3.9.2 Agriculture and Rural Division and Federal-Provincial Agreements

Laboratory Services provides support for plant diagnostics and soil mapping, as well as, environmental testing in support of the Great Lakes initiative. The volume of testing depends upon the OMAF or Ministry of the Environment program activities. The testing for the soil mapping initiative was less than anticipated.

3.9.3 Livestock Technology Branch

Laboratory Services supports the disease surveillance activities of the Livestock Technology through the Animal Health Laboratory (AHL). AHL provides a full range of diagnostic services to veterinarians who support the poultry and livestock industry. AHL's main activity is to provide accessible, highly reliable, and cost effective diagnostic testing that includes a broad scope of tests. Data generated as a result of the diagnostic testing is made available to the Veterinary Science group

within OMAF for the purposes of analyzing trends and identifying emerging diseases or urgent issues. AHL also supports the federal Health of Animals Act as a primary source of information on reportable diseases. During 2001/2002, AHL was instrumental in identifying significant threats to the livestock and poultry industry. *Salmonella* Typhimurium DT104 was found in chickens and hatchery fluff samples on several occasions. Other cases involving poultry included avian influenza virus (gulls and turkeys), paramyxovirus (ducks), and infectious laryngotracheitis in poultry and fowl cholera. There were two cases of botulism in horses and the finding of H4N6 (avian) influenza in a swineherd.

During 2001/2002, AHL processed 33,996 cases under the OMAF supported program. This generated 590,750 technical procedures.

New procedures were introduced for the identification of microorganisms using molecular-based testing or improved serological based testing. The new procedures provide a new level of information such as genotyping. In the case of new PCR methods, they provide more rapid identification of an organism. This is part of a plan to replace slower, more labor-intensive methods that do not meet our clients' needs for rapid and specific information. A number of the new tests relate to swine influenza and other viruses.

The AHL made a strong commitment to communication and continuing education of clients during 2001/2002. In addition to participating in industry meetings, the AHL set up regular continuing education events for veterinarians in eastern Ontario, held an open house at the Guelph facility, updated and distributed a pocket guide for laboratory users and redesigned the quarterly newsletter.

3.9.4 Related Provincial Programs Not Covered by the Agreement

Under a separate contract with OMAF, the AHL installed a new isolation facility and set up immunohistochemical procedures for the screening of transmissible spongiform encephalopathies in brain tissue. The facility is being used for an enhanced BSE study on behalf of OMAF and an evaluation of chronic wasting disease in cervids on behalf of elk producers. Laboratory Services was contracted by OMAF to perform microbiological and chemical testing in support of a pilot retail products survey. The purpose of the pilot was to assess the logistics and areas of focus for a larger study of retail food products.

The baseline study of microbiological contamination in poultry carcasses was largely completed. This was a multi-year research project.

Laboratory Services was contracted, through Agricorp, to provide testing services in support of a federal-provincial initiative to eradicate the plum pox virus in Ontario orchards. A massive screening program was required to determine the extent of the problem. The CFIA laboratories did not have the capacity to do the testing. LS set up a testing facility and processed 90,000 screening tests. This allowed the CFIA to identify critical areas and take steps to contain the disease.

4. FINANCIAL SUMMARY

Under the Memorandum of Agreement (MOA) between OMAF and the University of Guelph, effective April 1, 1997, the transfer payment to the University totalled $54.0 million, for each of, 1997/1998, 1998/1999, $53.7 million for 1999/2000 and $50.5 million for 2000/2001 and 2001/2002 with OMAF fiscal years ending March 31 each year.

The figures in this report are for the University of Guelph's fiscal year from May 1, 2001 to April 30, 2002 with a $50.5 million transfer payment.

Fig. 1. Distribution of Transfer Payment 2001/2002

Location	$ millions
•Guelph *	$22.8
•VCEP **	4.7
•HRIO (Research)	4.0
•Alfred	2.0
•Ridgetown	4.0
•Kemptville	4.0
•LSD ***	9.0
•Total	**50.5**

* For footnotes, see Fig. 2.

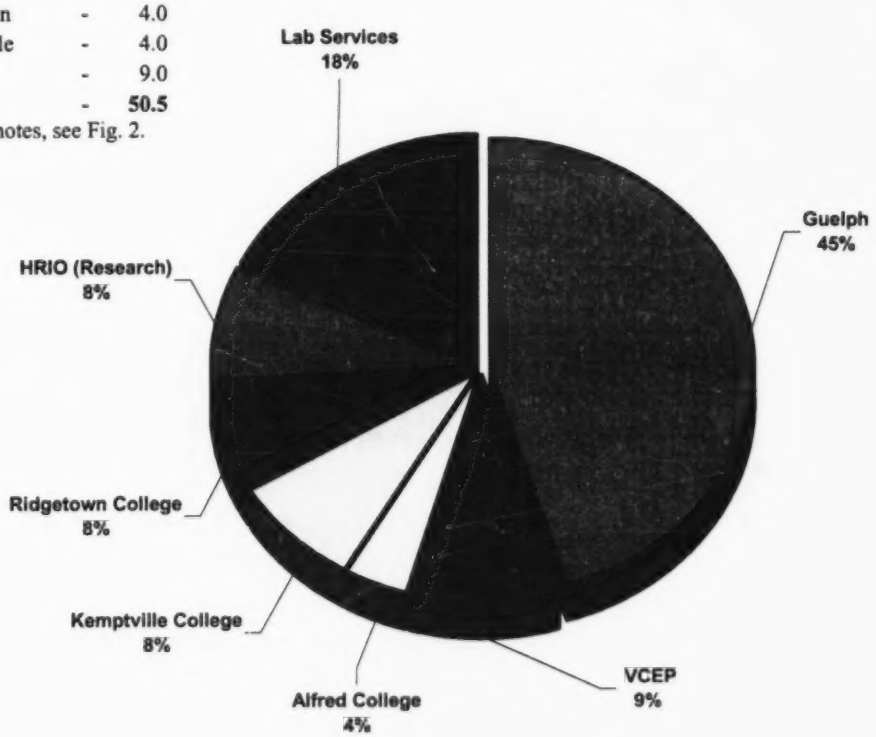


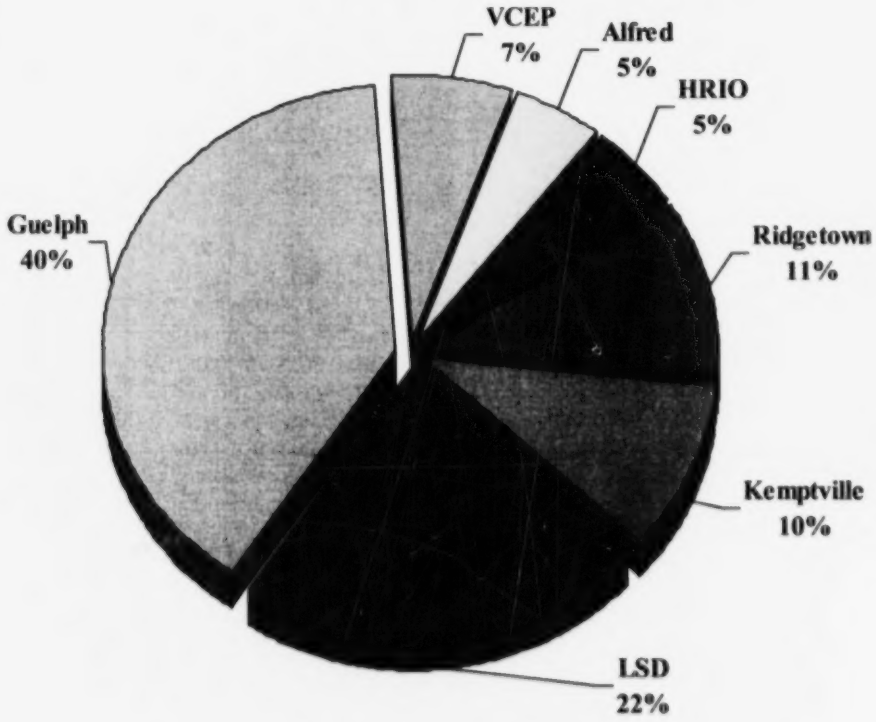
Fig. 2. OMAF Contract Financial Results

for the period May 1, 2001 to April 30, 2002

Actual Results: $71.7 million (Expenditures and Revenue)

Location	*$ millions*
•Guelph * -	$28.3
•VCEP ** -	4.7
•Alfred -	3.5
•HRIO -	3.9
•Ridgetown -	7.7
•Kemptville -	7.5
•LSD *** -	16.1
•Total Expenses -	**71.7**

* Includes Research Stations and all on campus research and diploma education activity.
** Veterinary Clinical Education Program
*** Laboratory Services Division



5. MEDIA COVERAGE

Between May 2001 and April 2002, the combined efforts of the Enhanced Agricultural Communication Initiative (EACI) and Students Promoting Awareness of Research Knowledge (SPARK), both based at the University of Guelph, have produced the following list of published articles and stories, on a variety of OMAF-sponsored projects. These articles have appeared in a number of different periodicals and publications, and cover the spectrum of the university's many different research institutions and sites, including the Axelrod Institute of Ichthyology, Laboratory Services Division, the regional colleges – Kemptville College, Ridgetown College and College d'Alfred – and the research stations in Vineland and Arkell, as well as the six colleges on U of G's main campus. The main vehicles for publication are the weekly column *SPARKPlugs* in the *Guelph Mercury* and the semi-annual *Research* magazine, as well as a number of commodity magazines and publications that publish articles produced by the SPARK program and the EACI. In addition, articles are also circulated over the Canadian Press Wire Service, which allow for extensive exposure of OMAF's research projects.

"Healthy animals, healthier food chain: Environmentally friendly selection methods boost immune systems of farm animals"
Research magazine –*Summer 2001* (Bruce Wilkie and Bonnie Mallard, Department of Pathobiology)

"It won't go to waste: Agricultural guidelines for applying sewage sludge get a new look" *Research* magazine –*Summer 2001* (Paul Voroney, Department of Land Resource Science)

"Stopping *E. coli* before it starts: How to keep harmful bacteria out of the food chain" *Research* magazine –*Summer 2001* (Carlton Gyles, Department of Pathobiology)

"Tobacco turns over a new leaf: Researchers use plants to produce antibodies for detecting food- and water-borne pathogens"
Research magazine –*Summer 2001* (J. Chris Hall, Department of Environmental Biology)

"Bacteria lurk in animal clinics: *Clostridium difficile* found in 'clean' areas of hospital" *Research* magazine –*Summer 2001* (Scott Weese, Department of Clinical Studies)

"Plight of the Monarch"
Research magazine –*Summer 2001* (Mark Sears, Diane Stanley-Horn, Department of Environmental Biology)

"Open to solutions: New technology further enhances natural aquaculture systems" *Research* magazine – *Summer2001* (Rich Moccia, Department of Animal and Poultry Science)

"Delay the drip: Timing your fertilizer application is important to protect groundwater quality"
Research magazine –*Summer 2001* (Gary Parkin and Claudia Wagner-Riddle, Department of Land Resource Science)

"Spotting the difference, naturally"
Research magazine –*Summer 2001* (Greg Boland, Department of Environmental Biology)

"Water hogs: Sewage treatment may not be agriculture's solution for waste management" *Research* magazine –*Summer 2001* (Ron Fleming, Ridgetown College)

"Cleaning up manure runoff: New technology has environmental and economic benefits" *Research* magazine –*Summer 2001* (Anna Crolla, College D'Alfred)

"Trees, Please: Agroforestry is a traditional conservation practice" *Research* magazine –*Summer 2001* (Andrew Gordon, Department of Environmental Biology)

"Putting some numbers to a nasty greenhouse gas" *Research* magazine –*Summer 2001* (Claudia Wagner-Riddle, Department of Land Resource Science)

"Smells like…normal: Researchers take first step in breaking down pig barn odour" *Research* magazine –*Summer 2001* (Nigel Bunce, Department of Chemistry and Biochemistry)

"Don't gamble with climate change" *Research* magazine –*Summer 2001* (Barry Smit, Department of Geography)

"Great wine only gets better with research" *SPARKPlug – Guelph Mercury* – July 28, 2001 (Helen Fisher, Vineland Research Station)

"Pesticide reduction research returns 600 per cent" *SPARKPlug – Guelph Mercury* – Oct. 27, 2001 (Cher Brethout, George Morris Centre)

"CFIA makes sure food labels reflect the contents" *SPARKPlug – Guelph Mercury* – Nov. 10, 2001 (Carla Berry, Lab Services Division)

"Farmers left behind in the financial field" *SPARKPlug – Guelph Mercury* – Nov. 24, 2001 (Brian Doidge, Ridgetown College)

"Introduced fish could be hurting native fish restoration efforts" *SPARKPlug – Guelph Mercury* – Jan. 13, 2002 (Robert Scott, Axelrod Institute of Ichthyology)

"Strawberries embrace their wild side" *SPARKPlug – Guelph Mercury* – July 7, 2001 (Alan Sullivan, Department of Plant Agriculture)

"Dollar spot destruction is on its way out" *SPARKPlug – Guelph Mercury* – Sept. 1, 2001 (Greg Boland, Department of Environmental Biology)

"Tobacco turns over a new leaf" *SPARKPlug – Guelph Mercury* – Aug 25, 2001 (J. Chris Hall, Department of Environmental Biology)

"New climate change network lands here" *SPARKPlug – Guelph Mercury* – Dec 1, 2001 (Ellen Wall, Faculty of Environmental Sciences, Barry Smit, Department of Geography)

"Preserving water – and farmers's dollars" *SPARKPlug – Guelph Mercury* – Jan. 19 2002 (Greg Stewart, OMAF corn specialists)

"Poultry industry flocks to foul food"
SPARKPlug – Guelph Mercury – Feb. 25, 2002 (Trevor Smith, Department of Animal and Poultry Science)

"Healthy animals, healthier food chain"
The Crest – Fall 2001 (Bonnie Mallard and Bruce Wilkie, Department of Pathobiology)

"Loose housing gets a long look at Arkell"
Pig Pens – Winter 2001 (David Barney, Arkell Research Station Swine Unit)

"The best people…for the best research"
Pig Pens – Winter 2001 (David Barney, Arkell Research Station Swine Unit)

"Narrowing the gap in growth variation"
Pig Pens – Fall 2001 (Cate Dewey and Angel de Grau, Department of Population Medicine)

"Pasteurization reduces Johne's disease risk"
Ontario Dairy Farmer – May/June 2001 (Joseph Odumeru, Lab Services Division)

"Post-partum danger"
Ontario Dairy Farmer – Sept./Oct. 2001 (Ken Leslie, Department of Population Medicine)

"Looking for BVD keys"
Ontario Beef Farmer – Winter 2001 (Robert Jacobs, Department of Pathobiology)

"Easing mid-summer pasture drought"
Ontario Beef – Late Spring 2001 (Jack Buchanan-Smith, Animal and Poultry Science)

"Canada's on the road to marketing friendlier fuel"
U of G Research News – Dec. 29, 2001 (Dean Donaldson, Kemptville College)

"Feeding for breeding"
Ontario Milk Producer – June 2001 (Paul Sharpe, Kemptville College)

"Open and shut case?"
Ontario Milk Producer – July 2001 (Randy Dingwell and Ken Leslie, Department of Population Medicine)

"Thrifty barn option"
Ontario Milk Producer – Sept. 2001 (Paul Sharpe, Kemptville College)

"Breeding boost"
Ontario Milk Producer – Nov. 2001 (Bonnie Mallard and Bruce Wilkie, Department of Pathobiology)

"Calves under glass"
Ontario Milk Producer – Jan. 2002 (Dennis McKnight, Raj Rana and Paul Sharpe, Kemptville College)

"Shedding new light"
Ontario Milk Producer – Mar. 2002 (Ken Leslie and Jeromy Tenflag, Department of Population Medicine)

"Maximizing returns"
Ontario Milk Producer – Apr. 2002 (Kerry Livesmore and Ken Leslie, Department of Population Medicine)

"Shedding light on starve-out"
Ontario Poultry Farmer – Summer 2001 (Ian Duncan, Department of Animal and Poultry Science)

"The big pneumonia picture"
Ontario Hog Farmer – Apr./May 2001 (Jeff Caswell, Department of Pathobiology)

"Smells like…normal"
Ontario Hog Farmer – June/July 2001 (Nigel Bunce and Peter Kench, Department of Chemistry and Biochemistry)

"Healthy pigs, healthy food chain"
Ontario Hog Farmer – Feb. 2002 (Bonnie Mallard and Bruce Wilkie, Department of Pathobiology)

"Sewage treatment for farms not solution"
The Rural Voice – Feb. 2002 (Ron Fleming, Ridgetown College)

"U of G students have soy many ideas"
@ Guelph – Jan. 31, 2002 (Project Soy)

"Edible Packaging, Udder Balm capture top prizes"
@ Guelph – April 2002 (Project Soy, Ridgetown College, Kemptville College, Alfred College)

"Health, environment entries compete for Project SOY awards"
Canadian Geographic – Jan. 25, 2002 (Project SOY)

"Alfred research a true team effort"
@ Guelph – June 19, 2002 (Anna Crolla, Alfred College)

AFRID, 2001/2

6. University of Guelph/OMAF Equipment Inventory

The following summary of estimated equipment replacement values is submitted in compliance with the requirements of the Memorandum of Agreement (1996) and includes the following institutions which became part of the University of Guelph as of April 1, 1997:

Laboratory Services Division
Alfred College
Kemptville College
Ridgetown College
Horticultural Research Institute of Ontario

	($ '000) Estimated Market Value or Acquisition Cost	($ '000) Estimated Replacement Cost
Alfred College	1,200	2,700
Kemptville College	2,900	5,600
Ridgetown College	5,100	7,900
Horticultural Research Inst		2,000
OMAF HQ		24,200
Lab Services Division	12,100	36,900
Research Station Operations - Guelph		
- Owned equipment		15,000
- Leased equipment		3,100
		44,100
Total		79,200

Note: Estimated Replacement Cost = Acquisition Cost x 3
Estimated Replacement Cost = Market Value x 3

9. INVENTORY AND RENTS OF DWELLING HOUSES STATUS

Evangeville College — Cities

Evangeville	1
New Lakeland	2
Total	3
Revenue	15,000
Expenses	2,000
Income Balance Opening	13,000
Closing	13,000

Bridgeview College

Bridgeview	2
Cedar Springs	1
Total	3
Revenue	18,000
Expenses	3,000
Income Balance Opening	15,000
Closing	15,000

Eastgate Gardens

Wren	1
Copperridge	1
Wisp	1
Mill House	1
Rosemilly	1
Ward	1
Stimson	1
Vineland	2
Total	10
Revenue	1,000
Expenses	5,000
Income Balance Opening	(4,000)
Closing	(4,000)

Note: Assets, WIP (HE) (Unit) 'M' (see option 'Registration on estimate (HE) (HE)' reporting) and 'M' (see

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible]	[illegible]		
[illegible]							
[illegible]							
[illegible]				

9. Acronyms

AAFC	Agriculture and Agri-Food Canada
AHL	Animal Health Laboratory
ARD	Agriculture and Rural Division
ARIO	Agricultural Research Institute of Ontario
AVMA	American Veterinary Medical Association
BDC	Business Development Centre
CARC	Canadian Agricultural Rural Communities
CARG	Colleges Academic and Research Group
CCA	Certified Crop Advisor
CE	Continuing Education
CFI	Canadian Foundation for Innovation
CFIA	Canadian Food Inspection Agency
CRIFS	Canadian Research Institute for Food Safety
EACI	Enhanced Agricultural Communication Initiative
FID	Food Industry Division
FTE	Full Time Equivalent
FSDSS	Food Safety Decision Support System
GC	Gas Chromatograph
GIS	Global Information System
GLP	Good Laboratory Practices
HPLC	High Pressure Liquid Chromatography
HRIO	Horticultural Research Institute of Ontario
IP	Intellectual Property
ISO	International Standards Organization
LIMS	Laboratory Information Management System
LSD	Laboratory Services Division
I-MCP	Metal Cyclopropene
MOA	Memorandum of Agreement
MTCU	Ministry Training, Colleges and Universities
NSERC	National Sciences and Engineering Research Council
OAC	Ontario Agricultural College
OFVGA	Ontario Fruit and Vegetable Growers' Association
OMAF	Ontario Ministry of Agriculture and Food
OPTAC	Ontario Pesticide Training and Certification Program
OPVG	Ontario Processing Vegetable Growers
ORC	Ontario Realty Corporation
OVC	Ontario Veterinary College
OWN	Ontario Weather Network
OYAP	Ontario Youth Apprenticeship Program
RM&E	Resource Management and Environment
RSO	Research Stations Operations
SPARKS	Students Promoting Awareness of Research Knowledge
SRC	Sustainable Rural Communities
TORC	The Ontario Rural Council
UofG	University of Guelph
VADDS	Veterinary Animal Disease Diagnostic System
VCEP	Veterinary Clinical Education Program
VTNE	Veterinary Technician National Examination
WUSC	World University Service of Canada